CHAPTER 15

MEDICAL EQUIPMENT REPAIR DIVISION

STANDARD OPERATING PROCEDURE

500 BED FLEET HOSPITAL

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500 BED FLEET HOSPITAL

STANDARD OPERATING PROCEDURES

MEDICAL EQUIPMENT REPAIR DIVISION

A. <u>MISSION</u>: Maintenance, repair, and installation of medical and dental equipment.

B. **FUNCTIONS:**

- 1. Preventive maintenance.
- 2. Corrective maintenance.

C. PHYSICAL DESCRIPTION:

- 1. Location within complex:
- 2. Sheltering.

Type: 2:1 ISO hardwall shelter.

Number: One.

3. Material.

IOL: 0007, 0008, MR3A, MR3B, MR3C, MRTL

D. SPECIAL CONSIDERATIONS:

Repair limited to circuit board and assembly level replacement rather than component level repairs.

E. WORKLOAD:

- 1. Steady State.
- (a) Approximately 100 medical equipment items/month will require scheduled maintenance.
- (b) Approximately 50 medical equipment items/month will require corrective maintenance.
- (c) All life saving/life support equipment require performance checks at maximum three month intervals.

- (d) X-ray systems and sterilizers require scheduled maintenance and calibration checks at maximum twelve month intervals.
- (e) Remaining medical equipment requires scheduled maintenance at maximum six month intervals.
 - 2. Peak State N/A.
 - 3. Other factors:
 - (a) Increased use during peak periods.
- (1) Increase probability for failure and thus increase corrective maintenance.
- (2) Decrease time available for corrective maintenance and thus increase probability of failure.
- (b) Extreme climatic conditions will increase failure probability.

F. ORGANIZATION:

- 1. Responsibility. The Medical Repair Supervisor, who reports to the Head, Material Management Department, is assigned overall management responsibility.
 - 2. Organizational chart.

HEAD, MATERIAL MANAGEMENT DEPARTMENT MEDICAL REPAIR SUPERVISOR

SECTION 1	SECTION 2	SECTION 3	SECTION 4
PREVENTIVE MAINTENANCE OFFICER	PARTS & SUPPLIES PETTY OFFICER	TEST EQUIPMENT	FIELD DAY PETTY
PETTY OFFICER		PETTY OFFICER	

- 3. Staffing.
 - (a) Criteria.
- (1) Three (3) advanced technicians assigned/watch, Monday Friday.
 - (2) Two (2) advanced technicians assigned/watch,

- one (1) on duty, one (1) on call, weekends.
 - (3) One (1) E-6 assigned to each watch.
- (4) Three (3) nine hour watches with one hour overlap at relief.
 - (b) Staffing pattern: Variable.
- 4. Assignments by Billet Sequence Number: See TAB A, page 14.
 - 5. Watch bill: See TAB B, page 15.
 - 6. Special watches: N/A.

G. TASKS:

TASK METHOD

1. UPDATE MAINTENANCE 1.1 Departmental records RECORD DATA include a complete set of Equipment Records (NAVMED 6700/3). Each end-item

6700/3). Each end-item
requiring maintenance is
fully identified on one
of these records.

1.1.A Record maintenance performed and other required

maintenance
data.

material tag maintained item.

control 1.1.C Refile records in number sequence in medical repair files.

2. STATUS TAG EQUIPMENT 2.1 Attach appropriate status tag to each equipment item at

time maintenance performed. Select and complete appropriate tag in accordance with TAB C-1.		is
a on and appropriate card.	2.1.A	If item does not bear tag, make entries attach
appropriate update to reflect maintenance performed.	2.1.B	If item bears card,
<pre>incorrect and replace appropriate one.</pre>	2.1.C	If item bears card remove with the
3. GENERATE/PROCESS WORK ORDER FOR either EMERGENCY REPA by If in refer to TAB If request is telephonic:	3.1 IRS	Accept requests for emergency repair in writing or telephone. writing,
using provided by	3.1.A	Prepare work order information caller.
F-4) work order	3.1.B	Record request in Work Order Log (see TAB and identify number.
number	3.1.C	Record work order on Work Order.
	3.1.D	Notify supervisor of request.
will workload,	3.1 .E	Supervisor/Watch LPO validate urgency, prioritize IAW assign

3.1.F Inform requestor of anticipated time. response 4.1 4. GENERATE/PROCESS Routine repair WORK ORDERS FOR must be requests submitted on ROUTINE REPAIRS Maintenance Work Order and should be accompanied by the defective material if the latter is movable. 4.1.A Record request in Work Order Log (see TAB F-4) and identify work order number. Record work order number 4.1.B on Work Order. 4.1.C Provide requestor with work order number and anticipated time. response Attach appropriate 4.1.D status tag to defective item (see TAB C-1). Deliver Work Order to 4.1.E supervisor. 4.1.F Supervisor/Watch LPO will validate urgency, priortize IAW workload, assign action repairman, and distribute Work Orders to assignee. If the defective item 4.1.G does not accompany

and

action repairman,

distribute Work Orders to assignee.

<pre>the supervisor/ will dispatch a repairman to inspect and appropriately tag the item.</pre>		Work Order, Watch LPO
5. GENERATE/PROCESS repairman WORK ORDERS FOR	5.1	On occasion, a will discover defects
REPAIRS DISCOVERED while DURING PM scheduled		requiring repair preforming
this can be the time, repairman will:		maintenance. When occurs and repairs completed at the
	5.1.A	Work Order and
document performed.		work
repair appropriate in the Work Order (See TAB F-4), and assign a Work Order Number.	5.1.B	Upon return to the shop, make entries Log
number out the Work	5.1.C	Enter the assigned on and close Order.
the Equipment Maintenance Record.	5.1.D	Post actions (scheduled and corrective), to appropriate
repairman	5.2	If repairs cannot be completed, the will:
	5.2.A	Initiate a Work Order.

5.2.B	Follow procedures	for
	Task 3 or 4 as	
	appropriate.	

Preventive maintenance

maintenance.

dates will

6.1

is scheduled through the use of the Generic PMS Schedule contained in the Actual be superimposed upon the D-day related dates in the generic schedule. During the last week of each subsequent month, the PM Petty Officer will prepare PM Work Orders for the subsequent month as follows:

> Review Generic PM 6.1.A Schedule and MRCs to identify equipment requiring Work

Orders.

6.1.B Prepare Work Orders for: by functional area or monthly

defibrillator checks each X-ray system scheduled.

6. SCHEDULING PM

to to each area. 6.1.C Attach MRCs pertaining scheduled equipment Work Orders for functional

Verification /Certification Worksheet and appropriate MRCs to each x-ray Work Order.

6.1.D Attach X-ray

assign

6.1.E Record Work Order in Log (See TAB F-4) and Work Order

Number.

	6.1.F	Enter Work Order Numbers on appropriate Work Order.
	6.1.G	Deliver Work Orders to supervisor.
	6.1.Н	Supervisor will review Work Orders, assign cognizant
repairman, and distribute Work Orders to assignee.		-
7. PERFORM PM	7.1	Each repairman will perform scheduled maintenance as
assigned supervisor. Scheduled maintenance will be performed IAW applicable MRCs as augmented by NAVMED P-5009 and manufacturers ma	anuals.	by
	7.1.A	Contact functional area to coordinate time to perform PM.
to history.	7.1.B	Review applicable maintenance records determine
	7.1.C	service manuals to identify required
tools, supplies.		parts, and
	7.1.D	Assemble all required items.
during corrective	7.1.D 7.1.E	

is identified, refer to Task 5.		
	7.1.F	Record performance on Work Order.
of and of noted. if other maintenance problems are known. If some exist, refer to Task 5.	7.1.G	Before leaving the area, advise the cognizant supervisor, or LPO work performed, discrepancies Ascertain
appropriate Maintenance and Log.	7.1.H	Return to Medical Repair shop and make entries in Records
for approval.	7.1.I	Deliver completed Work Order to supervisor review and
in Work	7.1.J	File closed Work Order Closed/Completed Order File.
8. PERFORM CORRECTIVE MAINTENANCE maintenance either has been	8.1	Repairmen will perform corrective that
assigned Supervisor or Watch LPO, or is identified during routine scheduled maintenance (See Tasks 5 and 7). Corrective mainte		prioritized and by the
whether perfor shop, or in function	med in the al area	the will be as follows:

as	8.1.A	Review the Work Order to obtain clarification required.
	8.1.B	Review the item's maintenance record to determine history.
to parts are	8.1.C	<pre>Inspect, troubleshoot, and operate equipment ascertain required repairs. If required:</pre>
Shop.	8.1.C.	Collect those parts available with the Medical Repair
	8.1.C.2	Requisition centrally stored parts from Material
Management IAW Chapter 14 (see Task 9.4.)		
	8.1.D	Effect repairs to equipment.
current	8.1.E	If equipment is electrically operated perform leakage checks to
ensure conformity with maximum allowable standards (see NAVMED 6700.36B).		
is	8.1.F	If item to be repaired near its scheduled maintenance
cycle, required PM.		maintenance perform
to further	8.1.G	Perform complete operational checkout ensure that no repairs are

required.

(and PM on Work Maintenance Record Work Order Log (see TAB F-4).	8.1	.H Document repairs if performed) Order and
requestor the item is for return, if work performed in shop).	8.1.1	Report completion to the functional area (and that ready
completion	8.1.J	Obtain requestor signature documenting satisfactory and return
of equipment. for	8.1.K	Deliver completed Work Order to supervisor review.
	8.2	As applicable, inform requestor of/that:
is same is	8.2.A	Required operator maintenance if there evidence that the lacking.
may frequency or future repairs.	8.2.B	Required changes in operation or use that reduce the need for
operation. that this authority should be given only when absolutely necessary.)	8.2.C	Incomplete repairs that restrict but do not eliminate (Note
local	8.2.D	Unit that is beyond repair

repair, etc). 9. CONTROL REPAIR PARTS 9.1 Repair parts specific to end items AND SUPPLIES will be stocked and managed by management. General repair items will be stocked and managed by Medical Repair. The supervisor will name a Parts and Supplies Petty Officer (P/S PO) responsible for maintaining readily available stocks. Assist others to requisition required material 9.2 Immediately following assembly, the P/S PO will review departmental inventories to: 9.2.A Ensure that authorized IOLs are complete. Become familiar with 9.2.B locations in order to assist other repairmen. 9.2.C Requisition missing. 9.3 The P/S PO will: Receive all deliveries 9.3.A of parts, supplies, and store in etc., appropriate location. 9.3.B Conduct monthly inventories of end

capability and the
alternatives available
 (i.e., survey, depot

use

material.

	9.3.C	Rotate shelf-life items.
	9.3.D	Requisition required material.
	9.4	Each repairman will:
supplies corrective scheduled maintenance.	9.4.A	Obtain parts and required for and
and maintained Repair.	9.4.B	Submit requisitions to the P/S PO for parts supplies not in Medical
	9.5	The P/S PO will:
requisitions propriety.	9.5.A	Review repairman- submitted for
requested not available Medical Repair.	9.5.B	Ensure that the material is within
requisition.	9.5.C	Obtain supervisor's approval of
	9.5.D	Process requisition.
stock.	9.6	Repairmen will return unused parts to
	9.7	The P/S PO will:
from identified and reasonable repair.	9.7.A	Obtain approval for and remove usable parts equipment beyond

	9.7.B	Maintain cannibalized parts in Medical
Repair		stocks.
10. PERFORM DAILY HOUSEKEEPING	10.1	Prior to securing, watchstander will:
trash	10.1.A	Empty all trash cans in the adjacent ISO containers.
	10.1.B	Sweep down all spaces.
	10.1.C	Properly stow all test equipment.
	10.1.D	Properly stow all tools.
tasks	10.1.E	Obtain from and perform other housekeeping assigned by
Watch LPO.		assigned by
	10.1.F	Relevel the ISO shelter.
11. PERFORM WEEKLY FIELD DAY	11.1	Prior to securing on Saturday, the AM Watchstanders
will:		
	11.1.A	Swab all departmental decks.
	11.1.B	Wipe down and degrease work surfaces,
shelves, cabinets.		and storage
	11.1.C	Change HVAC filters.

- H. **STANDARD OPERATING PROCEDURES:** See TAB C, Page 20.
- I. CLINICAL POLICIES/GUIDELINES: N/A
- J. **STANDARDS AND JOB DESCRIPTIONS:** See TAB D, page 25.

K. **DOCUMENTATION:**

1. References

See TAB E, page 28.

2. Forms

See TAB F, page 29.

TAB A ASSIGNMENTS BY BILLET SEQUENCE CODE

Department: MATERIAL MANAGEMENT - Medical Repair Division

Bille	t		Rank/	
Watch <u>Number</u> <u>Section</u>	<u>Title</u>	Designator	<u>Rate</u>	
19519	Medical Repair Supv.	8478/HM	E-7	*
19539	Adv. Med. Repair Tech Prev. Maint. PO	8478/HM	E-6	1**
19541	Adv. Med. Repair Tech Parts/Supplies PO	8478/HM	E-6	2**
19543	Adv. Med. Repair Tech Test Equipment PO	8478/HM	E-6	3**
19545	Adv. Med. Repair Tech Field Day PO	8478/HM	E-6	4**
19547	Adv. Med. Repair Tech	8478/HM	E-6	1**
19549	Adv. Med. Repair Tech	8478/HM	E-6	2**
19559	Adv. Med. Repair Tech	8478/HM	E-5	3**
19561	Adv. Med. Repair Tech	8478/HM	E-5	4**
19563	Adv. Med. Repair Tech	8478/HM	E-5	1**
19579	Basic Med. Repair Tech	8477/HM	E-4	2**
19581	Basic Med. Repair Tech	8477/HM	E-4	3**
19583	Basic Med. Repair Tech	8477/HM	E-4	4**

NOTE 1.

Supervisor permanently assigned to AM watch. Rotationally assigned two weeks of AM, PM, and ** NOTE 2. night watches.

TAB B WATCH BILL FOR MEDICAL REPAIR DIVISION

WEEKS 1 - 3

BILLET#	Т	W	Т	F	S	S	M	Т	W	Т	F	S	S	М	Т	W	Т	<u>F</u>
<u>S</u> S																		
19519* A	А	A	А	А	A	С	A	А	A	А	А	A	E	А	A	A	А	A
A E																		
19539	7\	7\	7\	A	C	7\	7\	7\	7\	7\	7\	7\	E.	D	D	D	D	Р
C P	A	A	A	A	C	A	A	A	A	A	A	A	15	F	F	Г	F	r
19541														_		_		_
C A	N	N	N	N	С	N	N	N	N	N	N	N	E	A	A	A	A	A
19543																		
C N	P	Р	P	Ρ	С	P	P	P	P	P	P	P	E	N	N	N	N	N
19545																		
A C	N	N	N	N	С	N	N	N	N	N	N	N	Ε	A	A	A	A	A
19547																		
P E	A	A	A	A	A	Ε	Ρ	Ρ	Ρ	Ρ	Ρ	С	Ρ	Ρ	Ρ	Ρ	Ρ	P
19549																		
N E	Ρ	P	Ρ	P	Ρ	E	N	N	N	N	N	С	N	N	N	N	N	N
19559																		
A E	N	N	N	N	N	E	A	A	A	A	A	С	A	A	A	A	A	A
19561																		
N E	Р	Ρ	Р	Р	Ρ	E	N	N	N	N	N	С	N	N	N	N	N	N
19563																		
C A	N	N	N	N	С	N	N	N	N	N	N	N	Ε	A	A	A	A	A

*NOTE 1: Supervisor permanently assigned to day watch.

KEY:

A = 0700-1600. P = 1500-2400. N = 2300-0800. E = Excused. C = On Call.

 $\label{eq:tab-b} \mbox{ \begin{tabular}{ll} TAB-B\\ \hline \end{tabular} B \\ \mbox{ \begin{tabular}{ll} WATCH-BILL-FOR-MEDICAL-REPAIR-DIVISION \\ \hline \end{tabular} }$

WEEKS 4 - 6

BIL	LET #				_	~	~		_		_	_	~	~		_		_	_
S	S <u>M</u>	Т	W	.1.	F'	S	S	M	Т	W	T	F	S	S	M	_T_	W	_T_	F
	519* A	A	A	A	A	A	E	A	А	A	А	A	А	E	A	A	А	A	A
A	E						_							_					
195	39 P	P	P	P	P	P	E	N	N	N	N	N	С	N	N	N	N	N	N
N	E																		
195 P	41 A E	А	А	A	A	A	E	P	P	P	P	P	С	P	P	P	P	P	P
195	43 N	N	N	N	N	N	E	A	A	A	A	A	С	A	A	A	А	A	A
A	E																		
195 P	45 A E	А	A	A	A	A	E	Р	Р	Р	Р	Р	С	Р	Р	Р	Р	Р	P
	47 N C	N	N	N	N	N	С	N	N	N	N	N	N	E	А	А	А	А	А
195 P	A	A	А	A	A	A	С	A	А	А	А	A	А	E	Р	Р	Р	Р	P
195 C	59 P N	P	P	Ρ	P	С	P	P	P	P	P	P	P	E	N	N	N	N	N
195 C	A	A	A	A	A	С	A	A	A	A	A	A	A	E	P	P	P	P	P
195 P	63 A E	А	А	A	А	A	E	P	P	P	P	P	С	P	P	P	P	P	Р

*NOTE 1: Supervisor permanently assigned to day watch.

KEY:

A = 0700-1600. P = 1500-2400. N = 2300-0800. E = Excused. C = On Call.

TAB C STANDARD OPERATING PROCEDURES

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NUMBER	TITLE	PAGE
C-1	Material Status Tagging	21
C-2	Recall Staff	23
C-3	Maintenance of General Files	24
E-4	Hazardous Waste	

TAB C-1

MATERIAL TAGGING

- A. **PURPOSE:** To readily identify serviceability status of a repairable equipment item.
- B. **DEFINITION:** N/A.

C. EQUIPMENT, SUPPLIES, AND FORMS REQUIRED:

- 1.DD Form 1574, Serviceable Tag Material or Similar Tag.
- 2.DD Form 1577-2, Unserviceable (Repairable) Tag Materiel or Similar Tag.
- 3.DD Form 1577, Unserviceable (Condemned) Tag Material or Similar Tag.

D. CRITERIA:

Each maintained equipment item bears a properly annotated card reflecting its current material condition.

E. STEPS:

- 1. Serviceable status tag.
- (a) Attach upon completion of scheduled or corrective maintenance that results in equipment that functions normally.
 - (b) Enter appropriate data as exhibited in TAB J-2.
- (c) If end-item is electrically powered, attach Material Status Tag to line cord as close to point of entry into equipment item as possible.
- (d) In other cases, attach tag to highly visible area where it will not inhibit normal use.
 - 2. Unserviceable (repairable) status tag.
 - (a) Remove existing serviceable tag.
- (b) Attach unserviceable (repairable) tag if CASREP cannot be resolved immediately and repairman is unable to remain with the item.

- (c) Enter appropriate data.
- (d) Attach tag to highly visible area.
- 3. Unserviceable (condemned) status tag.
 - (a) Remove existing tag.
- (b) Attach to equipment that is beyond all repair capability.
 - (c) Attach tag to highly visible area
 - (d) Enter appropriate tag data.
- (e) Make appropriate entries on Maintenance Service Record. Record must accompany any subsequent disposal documentation.
 - (f) Assist in disposal process.

TAB C-2

RECALL STAFF

- A. **PURPOSE:** To provide a system to recall off-duty personnel.
- B. **DEFINITION:** N/A.
- C. EQUIPMENT, SUPPLIES, AND FORMS REQUIRED:

Departmental Watch Bill.

D. CRITERIA:

Additional staff is sufficiently augmented to meet increased workload.

E. STEPS:

- 1. Senior Repairman will initiate recall when:
 - (a) Response times are excessive.
 - (b) Directed by higher authority.
- 2. The recall will be:
- (a) Limited to the number of augmentees actively required.
- (b) Reported to the Chief, Material Management Department.
 - 3. On call personnel will:
 - (a) Respond as quickly as possible.
 - (b) Report to Senior Repairman.

TAB C-3

MAINTENANCE OF GENERAL FILES

- A. **PURPOSE:** To provide a system for maintaining departmental general files.
- B. **DEFINITION:** N/A.
- C. EQUIPMENT, SUPPLIES AND FORMS REQUIRED: N/A.

D. <u>CRITERIA</u>:

- 1. Forms are filed in sequence file number and chronological order.
 - 2. Documents are easily retrievable.

E. STEPS:

- 1. The Senior Repairman will:
- (a) Assure all correspondence, message traffic and other files are maintained IAW SECNAVINST 5210.11C Standard Subject Identification Codes.
- (b) Maintain any other file as directed by Head, Material Management Department.
 - 2. At a minimum, the file will contain:
 - (a) Departmental logs.
 - (b) Maintenance requests.
 - (c) Supply requests.
 - (d) Watch bills.
 - (e) Notices/instructions.

F. RESPONSIBILITY:

Senior HM.

TAB D

STANDARDS AND JOB DESCRIPTIONS

INDEX

NUMBER PAGE		TITLE		
D-1 26	BIO-MEDICAL	EQUIPMENT	TECHNICIAN,	ADVANCED
D-2 27	BIO-MEDICAL	EQUIPMENT	TECHNICIAN	

TAB D-1

BIO-MEDICAL EQUIPMENT TECHNICIAN, ADVANCED

- 1. Maintains, repairs and installs mechanical, electromechanical, medical and surgical diagnostic and treatment apparatus, patient monitoring and recording systems.
- 2. Supervises and conducts preventive maintenance programs.
- 3. Manages repair parts.
- 4. Advises local medical equipment and survey boards.
- 5. Coordinates medical equipment safety programs with local safety officers and renders technical advice and assistance as required.
- 6. Acts as medical maintenance supervisor or inspector.

QUALIFICATIONS:

Source rating HM.

TAB D-2

BIO-MEDICAL EQUIPMENT TECHNICIAN

- 1. Maintains and repairs mechanical and electromechanical medical equipment, i.e., operating room, basal metabolism, laboratory, pharmaceutical, orthopedic, eye, ear, nose, and throat, dental, and general medical and surgical diagnostic and treatment apparatus and machines under the supervision of a BMET electronic or x-ray.
- 2. Participates in the medical equipment preventive maintenance and safety programs.

QUALIFICATIONS:

Source rating HM.

TAB E

REFERENCES

INDEX

BUMEDINST 6700.36B, Medical and E-1Equipment Maintenance and Dental Repair Manual

NAVMED P-5009, Procedures and E-2Serviceability Standards for

Medical Equipment

TAB F

FORMS

INDEX

NUMBER PAGE	FORM NUMBER	FORM TITLE
F-1	NAVMED 6700/3	Medical/Dental Equipment Maintenance Record
F-2	DD FORM 157X	Material Tag (multiple)
F-3	NAVMED 6700/4	Maintenance Work Order
F-4 30	N/A	Work Order Log Format
F-5	DD FORM 2164	X-ray Verification/ Certification Worksheet
F-6	N/A	Evacuation Flow Chart
F-7	DD 599	Patient's Effects Storage Tag
F-8	NAVMED 6010/8	Patient's Valuables Envelope
F-9		Daily CONREQ for HVMC Items

TAB F-4

MEDICAL MAINTENANCE WORK ORDER LOG

LEFT FACING PAGE

W.O. NO.	DEPT/ LOCATION	REQUESTOR	EQUIPMENT CONTROL NO.	EQUIPMENT TYPE	(DDMMYY)
_					
					_

-		
		

TAB F-4

MEDICAL MAINTENANCE WORK ORDER LOG

RIGHT FACING PAGE

DATE	PROBLEM/	REPAIRMAN	STATUS/CONDITION/	COND.	COMPL.
REP.	MALFUNCTION	RESPONDING	DISPOSITION	CODE	REVIEW

		
		